

Notice of Allowability

Application No.

09/997,073

Applicant(s)

LI ET AL

Examiner

Matthew J Song

Art Unit

1765

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 11/12/2004.
2. ☒ The allowed claim(s) is/are 1-26.
3. ☒ The drawings filed on 28 November 2001 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying Indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

**NADINE G. NORTON
SUPERVISORY PATENT EXAMINER**



DETAILED ACTION

Terminal Disclaimer

1. The terminal disclaimer filed on 11/12/2004 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of any patent granted on application 10/313,088 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Allowable Subject Matter

2. Claims 1-26 are allowed.

3. The following is an examiner's statement of reasons for allowance: The closest prior art is Nakabayashi et al (US 5,874,364). Nakabayashi et al teaches a method of metal-organic deposition to form an electrode comprising flowing a ruthenium metal organic precursor and H₂ gas to form a ruthenium film and forming a ruthenium oxide film thereon by flowing a ruthenium metal organic precursor and O₂ gas (col 23, ln 60 to col 24, ln 25). The use of a similar metal organic reactant, Ru(DMHPD₃) and first and second reactant, H₂ and O₂ respectively, as applicants, would be expected to produce the claimed effects of applicants' step (i) and step (ii). Nakabayashi et al teaches a SrTiO₃ is formed on the Ruthenium oxide film to form a capacitor dielectric film (col 24, ln 15-25). Nakabayashi et al does not teach or suggest re-introducing the first reactant into the CVD chamber for a third period of time, wherein the first reactant gas in deposition of the metal component into interstitial spaces formed during the

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increased agglomeration of the metal component into the substrate during introduction of the second reactant gas to thereby improve surface morphology of the metal film.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Yang et al (US 6,524,867) teaches alternating the introduction of reducing and oxidizing gases and is commonly owned by the Assignee of Record.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew J Song whose telephone number is 571-272-1468. The examiner can normally be reached on M-F 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571-272-1465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Matthew J Song
Examiner
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MJS
February 2, 2005

NADINE G. NORTON
SUPERVISORY PATENT EXAMINER

